

**Incorporation of 150 genetic markers into the metric physical map of human chromosome 19.** H. Mohrenweiser, S. Tsujimoto, A. Swartz, A. Olsen, B. Brandriff and L. Gordon. Human Genome Center, L-452, Lawrence Livermore National Laboratory, Livermore, CA

The order of and distance between over 150 polymorphic markers have been determined through inclusion of probe positive cosmids in the physical map of human chromosome 19. The integrated map (spanning 60MB) includes ~100 markers with heterozygosities of >0.50 and >90% of the genetic markers included in available linkage maps (average length of 120cM). The incorporation of these markers into the metric physical map resolves the order of tightly linked genetic markers within a genetic map and provides estimates of physical distance between markers, but most importantly integrates the different linkage maps. The average distance between markers is ~350kb and for only eight pairs of markers is the spacing greater than one MB (largest gap is <2MB). Several interesting discrepancies between the estimated physical and genetic distances are noted; for example, the genetic distance between some pairs of markers in the p13.3 region is 10-15 times the physical distance. Clustering of markers is also noted; for example, eight highly informative markers map within a region of less than 800kb in p13.1. The integration of genetic markers into the high resolution physical map that includes ~40MB of EcoR1 restriction enzyme mapped, sequence ready cosmid clones, provides reagents for generating additional genetic markers that are precisely localized within defined regions and a unique resource for isolation of mapped disease genes. Work performed under auspices of the US DOE by the Lawrence Livermore National Laboratory; contract No. W-7405-ENG-48